

Why Incredible Shrinking and Amazing Growing Rays Won't Work

Scott Matheson Hitchcock

08/21/21



As you can see in the figures above the atoms of the subject always remain the same size with effective electron orbital diameters constant for a given element. Exposure to 'radiation' as in the classic 1950's Sci-Fi movies can hypothetically shrink or grow the victim with runaway effects leading to dramatic disaster.

The **normal** state for atoms in the construction of complex bio-molecules that form our cellular and body structures have well known fixed bond distances holding any two atoms together.



In the case of **shrinking** a person, some sort of hypothetical ray or radiation would in theory cause the atoms to come closer together resulting in the victim becoming more 'compact' and thus smaller. The total number of atoms composing the victim remains constant so the only way to get smaller is to have all the atoms move closer together. The obvious error with this is that if you try to force two atoms closer together than their natural bond distance they will repel each other pushing them apart in opposition to the imposed shrinking force. If they are compressed too much one could imagine a 'fusion' effect where the nature of the chemical and biological metabolism supporting life would be destroyed by changing how the atoms interact at such close distances.

In the case of making a **colossal** person or giant by some sort of radiation exposure the total number of atoms composing the victim remains constant so the only way to get bigger is to have all the atoms move further apart but then you would break the bonds in the limit of larger distances. So effectively you would blow them apart by breaking all the chemical bonds necessary to sustain life.

Therefore we see that incredible shrinking or colossal people created by any fictitious force is impossible and rather obviously so. Suspension of disbelief is key to having fun with this Sci-Fi fantasy vehicle.